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ENVIRONMENT, INTERNATIONAL COMPETITIVENESS AND DEVELOPMENT: LESSONS FROM EMPIRICAL STUDIES

The policy debate on trade, environment and development

Report by the UNCTAD secretariat

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CONTENTS

		Paragraphs
	INTRODUCTION	1 - 3
I.	**CONCEPTUAL AND METHODOLOGICAL ISSUES**	4 - 23
	A. Competitiveness concepts	5 - 12
	B. Methodological approaches	13 - 23
II.	**IS COMPETITIVENESS AN ISSUE? THE EXPERIENCE OF DEVELOPED COUNTRIES**	24 - 41
	A. Findings from studies on environment and competitiveness in the developed countries	25 - 29
	B. Competitiveness concerns and future environmental regulation	30 - 37
	C. Conclusions	38 - 41
III.	**LOSING EXPORT COMPETITIVENESS: CONCERNS OF DEVELOPING COUNTRIES**	42 - 75
	A. Sectoral composition of exports	45 - 51
	B. Firm size	52 - 61
	1. Share of SMEs in exports	53 - 54
	2. Constraints faced by SMEs	55 - 61
	C. Structural factors	62 - 65
	D. Responses to external environmental requirements	66 - 69
	E. Conclusions	70 - 75
IV.	**MULTILATERAL ENVIRONMENTAL AGREEMENTS (MEAs)**	76 -131
	A. The use of trade measures	79 - 88
	1. The Montreal Protocol	80 - 81
	2. The Basel Convention	82 - 87
	3. CITES	88
	B. Trade and competitiveness effects of MEAs	90
	1. The Montreal Protocol	91 -100
	2. The Basel Convention	101 -106
	3. CITES	107
	C. Adequacy of facilitating mechanisms in MEAs	108
	1. The Montreal Protocol	109
	a. Differential phase-out schedules and other enabling mechanisms	110-116
	b. Finance and technology transfer	117-122
	2. The Basel Convention	123-125
	3. CITES	126
	D. Conclusions	127-131
V.	**CONCLUSIONS AND RECOMMENDATIONS**	132-148
	A. Conclusions	132-141
	B. Recommendations	142-147
	C. Points for future discussion	148

INTRODUCTION

1. In accordance with its terms of reference, the Ad Hoc Working Group on Trade, Environment, and Development (AHWG) is, inter alia, examining the trade and competitiveness effects of environmental policies, standards, and regulations. The Group initiated its deliberations on the subject at its second session (6 to 9 June 1995), aided by the secretariat's report TD/B/WG.6/6 on "Environmental policies, trade and competitiveness: conceptual and empirical issues". Following from the deliberations at the second session, the present report addresses some questions and some gaps identified by the Group.

2. This report builds on the conclusions of TD/B/WG.6/6 and draws from the Chairman's summary at the second session. Wherever necessary, cross-references have been made to the earlier report, but it should be noted that the two reports are meant to complement one another. The report is organized as follows: Chapter I discusses definitions and methodologies used in empirical studies to examine the trade and competitiveness effects of environmental policies. As most of the empirical studies used in this report and the previous work of the AHWG refer to the country case studies conducted under the UNCTAD/UNDP project, the discussions focus on the methodology and the conceptual definitions used in these studies. Chapter II discusses the implications of competitiveness effects on environmental policy-making in developed countries. Chapter III builds on the discussions of the last session of the AHWG, addressing the significance of environmental policies on the export competitiveness of developing countries. Chapter IV analyses the trade and competitiveness effects of Multilateral Environmental Agreements (MEAs) on developing countries. Finally, Chapter V summarizes the main findings and explores the positive measures which can be used to take account of development concerns in the interface of trade and environment. A Statistical Annex is being issued separately (English only).

3. The UNCTAD secretariat wishes to thank the secretariats of the Montreal Protocol, the Basel Convention and UNEP for the valuable comments on earlier drafts.

I. CONCEPTUAL AND METHODOLOGICAL ISSUES

4. This chapter discusses the concepts and methodologies used in the country studies. The objective is to promote a better understanding of their findings and policy implications.

A. Competitiveness concepts

5. The term competitiveness refers to that of both firms and countries. In each case, this report focuses on international competitiveness. Competitiveness of firms can be defined as the ability of individual firms to maintain or increase market share on a sustained basis.[1] Another definition of competitiveness at the firm level refers to the ability of firms either to lower costs or to offer products of superior quality at a premium price.[2] Yet another definition of competitiveness may be derived from profitability and hence from the interplay of cost and price (see paragraph 25 to 28). Interpreting this definition in the context of environmental policies would imply that the competitiveness of regulated firms would improve if environmental policies result in lower costs or in price premiums for their environmentally friendly products. Whether firms find their costs rising or falling is an empirically verifiable proposition and in fact the country studies have generally used cost increases and decreases as a proxy for changes in competitiveness.

6. However, the costs of adaptation to environmental factors may vary across firms and across countries, thus attesting to the importance of several other factors which enter the environment-competitiveness equation. Even if firms do report cost increases associated with particular environmental requirements, the fact remains that such costs could change with enabling policies or innovative

approaches. Thus studies on environment-competitiveness relationships should be taken as a static and partial representation, with the full recognition that the dynamic interpretation of the relationship may be completely different.

7. Short-run losses in competitiveness of firms can be compensated for with greater ease in developed countries on account of a more diversified production structure, more capital, better infrastructure, and better education and training of the labour force, among other factors.[3] For firms in developing countries, the consequences of short-run competitiveness effects could be more significant than for firms in developed countries. Unless countries are growing rapidly, they may have fewer possibilities to compensate for short-run losses in competitiveness.

8. At the national level, however, competitiveness is a more complicated concept. Some have argued that since it is firms rather than countries that are involved in international business, the term competitiveness at the country level is a misnomer. Indeed, it may be more useful to think in terms of national welfare rather than national competitiveness.

9. National competitiveness (or national welfare) is not simply a linear aggregation of the competitiveness of individual firms. Analysing it requires a much broader consideration of a wider set of issues which could include factors such as productivity, technological innovation, investments, export and import prices, trade and capital balances, working conditions, taxes, political stability, etc.[4]

10. There are a number of reasons why environmentalists argue that it is useful to consider the welfare issue at the country level.[5] While the benefits of enhanced environmental protection may often not accrue to the regulated firm, at the country level these benefits may be more relevant. For example, while regulations on effluent treatment may increase the costs to an individual firm, at the national level the gains may be positive because of the decrease in the incidence of water-borne disease. Gains at the national level also depend on social preferences.

11. One way of abstracting from the difficulties of defining national competitiveness could be to focus the discussion on competitiveness effects at the firm or sectoral level. For example, some inferences can be made about competitiveness at the sector level if a sufficiently representative sample of firms has been surveyed. It can also be argued that when the export basket of a country comprises products from only a few sectors, then the export competitiveness effects at the national level become more closely related to competitiveness effects on these sectors. This inference can be drawn from some of UNCTAD's country case studies. Chapter III thus examines sectoral issues in considerable detail.

12. Similarly, where small-scale firms produce a large share of the output or exports from a particular sector, then a representative sample of small scale firms may be used to gauge the possible competitiveness effects on that particular sector.

B. Methodological approaches

13. The country case studies referred to in this report and in TD/B/WG.6/6 basically addressed two broad sets of issues:[6] One concerns the effects of changes in environmental regulations (and other measures deriving from environmental considerations) on the international trade prospects of developing countries and transition economies; the second deals with the impacts of changes in trading regimes on the environment.

14. The first set of issues relates to changes in environmental regulations in a formal sense as well as changes owing to the growing public concern for a better environment. A number of questions need to be addressed in this context:

(a) Do stricter environmental regulations of trading partners lead to higher costs for exporters, as well as a reduced volume of trade?

(b) What are the impacts of stricter environmental regulations in the developing countries and economies in transition on their exports and imports?

(c) Are programmes instituted on a voluntary basis in developed countries (such as the eco-labelling programme) having a detrimental impact on the exports of the countries studied, or do they offer new market opportunities for those countries?

(d) What are the trade and competitiveness implications of Multilateral Environmental Agreements (MEAs)?

15. Both reports on competitiveness deal in greater detail with the first rather than the second set of issues. However TD/B/WG.6/6 did draw upon the evidence from the country studies on the second set of issues and inferred that the ability of firms to comply with domestic and external environmental policies generally is enhanced by trade liberalization and economic growth.

16. In analysing the first set of issues, two different approaches have been followed. One approach has been to analyze whether there is awareness, in particular among exporters, of environmental policies and measures of any type. A typical question being asked following this approach is whether environmental factors have any effect on product and process requirements, environmental management strategies, company export strategies, export competitiveness or market access. Another approach has been to take a specific environmental measure, such as the German packaging ordinance or the European Union's eco-label for a specific product, with a view to analysing its trade and competitiveness effects. Each of these two approaches has been applied either across the board or in the context of case studies on specific products or sectors.

17. Studies which have followed the first approach generally found that environmental factors had relatively small effects on trade and competitiveness. This, however, could be attributed to the fact that product-related environmental standards are still relatively rare; in many sectors such standards simply do not exist. Studies which have followed the second approach tend to show more significant effects.

18. In a number of studies, questionnaires have been used (in general following the first approach mentioned above). For example, in Turkey an extensive survey (covering 60 private companies) was carried out through questionnaires and follow-up interviews. A research team in Colombia used both questionnaires and interviews. Similarly, research teams in China, India, Poland, Thailand and Zimbabwe used a combination of the two approaches.

19. In many cases, studies are based on an ex ante analysis of possible effects of environmental measures. For example, studies on the possible effects of eco-labelling on the competitiveness of developing-country firms are based on a preliminary consideration of the perceived degree of difficulties that firms would encounter in complying with different eco-criteria.

20. Some primary data have been collected, in particular on compliance costs, based on interviews with representatives of firms, associations and government officials. Where the major exporters were only a few firms, an attempt has been made to interview all these firms.

21. As far as possible the consistency of the results emerging from the studies is being verified by the UNCTAD secretariat using secondary sources (e.g. international trade statistics, consultations with officials in importing countries and secretariats of MEAs) and comparisons with results of other studies undertaken as part of the programme or elsewhere.

22. So far systematic empirical studies on environmentally related competitive effects have focussed on assessing the impacts of domestic environmental measures on domestic industries in developed countries. The current series of country studies are probably the first attempt to document the effects of foreign environmental polices on domestic industries of developing countries. Given the methodological difficulties involved, there is a risk that some of the information may be subject to change, particularly in view of the fact that the effects are potential rather than reflecting actual experience.

23. Nevertheless, policy-makers need information and analysis before trade and environment-related policies are implemented. The purpose of this report is thus to raise awareness and generate discussion to help policy-makers in their efforts to move towards integrated approaches, rather than to demonstrate any incompatibility between environmental policy in developed countries and trade interests of developing countries.

II. IS COMPETITIVENESS AN ISSUE? THE EXPERIENCE OF DEVELOPED COUNTRIES

24. This chapter reviews the competitiveness issue in the context of developed countries. Competitiveness concerns have been cited by some commentators as the main reason for postponing environmental policies. While a number of studies indicate that environmental policies have had little effect so far on trade and competitiveness, it is a moot point whether the pace of enactment of environmental legislation may nevertheless be slowing down in some developed countries. Questions concerning the cost-effectiveness of environmental policies are being raised in a number of developed countries.

A. Findings from studies on environment and competitiveness in the developed countries

25. Studies conducted in the member countries of the Organization for Economic Cooperation and Development (OECD) do not show a systematic negative correlation between environmental standards and/or regulations and competitiveness. Economists have examined this relationship in the developed countries by asking:

(a) Whether the trade performance of highly regulated sectors has deteriorated compared to less regulated sectors;
(b) Whether production or investment from highly regulated sectors has moved to countries where regulations are less stringent;
(c) Whether there is a negative correlation between stringency of environmental regulations and profitability; and
(d) Whether basic indicators such as productivity are adversely affected for firms in highly regulated sectors.[7]

26. With regard to question (a), a 1994 World Bank study found that contrary to common perceptions, higher environmental standards in developed countries have not led to a decrease in exports of environmentally sensitive goods. Germany, for example, which has stringent environmental standards has actually increased its export share in such goods while losing market shares in manufactures as a whole. In addition, a 1992 study by the World Resources Institute shows that the United States bilateral trade deficit with Japan has been large although Japanese environmental standards were stricter than American standards in several respects, lending support to the proposition that overall exports are not necessarily affected by environmental standards.[8]

27. With regard to question (b), data on investment flows provide little or no support for the contention that Transnational Corporations (TNCs) are relocating environmentally sensitive industries to countries with low standards. A study on Argentina, Brazil, Colombia, Hong Kong, Malaysia, Nigeria, Philippines, Republic of Korea, Singapore, Taiwan Province of China, Thailand and Venezuela shows that foreign direct investment (FDI) in the pollution-intensive industries represents a smaller share of total FDI than in the 1960s and 1970s. This was so despite the fact that environmental regulations had tightened in the home countries.[9]

28. With regard to (c), if profitability were taken as an indicator of competitiveness, it is equally unclear that firms with superior environmental performance tend to be more or less profitable compared to establishments with inferior environmental performance within the same industry. For example, across the entire range of manufacturing industries included in the study by the World Resources Institute, correlations between profitability and the intensity of toxic releases are weak.[10] Even when the age and scale of a plant and the amount of recent investment in plant and equipment are taken into account, there is no overall tendency for plants with superior environmental performance to be less profitable.[11]

29. With regard to (d), the relationship between environmental regulations and productivity varies considerably across sectors. Studies in the United States of three sectors, namely steel, oil, and paper, have found that there may be a negative relationship between a plant's pollution-abatement costs and its total factor productivity and growth rate (1992). Abatement costs may also be negatively associated with labour-productivity growth. However, while paper mills with a higher enforcement of environmental standards did tend to have slower productivity growth, the results for steel and oil were neither significant nor consistent. Moreover, while heavier polluters tended to have lower productivity levels and slower productivity growth, effects were rarely significant or consistent across industries.[12] It should also be mentioned that methodological problems abound in this kind of analysis.[13]

B. Competitiveness concerns and future environmental legislation

30. Empirical evidence does not show that competitiveness has been adversely affected by stringency of environmental regulations. This finding raises the interesting question as to why, apparently in contradiction with what might be expected, the debate continues to focus on whether competitiveness concerns in the developed countries prevent or postpone the implementation of more stringent domestic legislation. According to some reports, the pace of environmental legislation might be slowing down.[14]

31. Conversely, press reports indicate strong public support for the environment, which would lend strength to the view that new environmental legislation will continue to be implemented.[15]

32. Whether or not the pace of environmental legislation is slowing down is difficult to ascertain.[16] According to some reports, business' expectations regarding new environmental regulations are currently low; demand for environmental consultancy work may be decreasing, and the initial enthusiasm for environmental auditing and reporting would appear to be waning.[17]

33. A possible slowdown, if any, in the pace of new environmental regulations could be explained by a number of factors: (a) the economic recession of the mid-1990s; (b) the fact that environmental regulations have already addressed many of the main environmental concerns, particularly those relating to emissions from stationary sources; (c) the fact that certain environmental legislation has been expensive, particularly new legislation under discussion in the developed countries, accounting for longer gaps between formulation of policies and their implementation. This may erroneously give the impression that policies are

losing strength; (d) the possibility that the innovation offsets expected from the legislation may not have been forthcoming; and (e) the cost reductions which have occurred following environmental legislation have been modest in comparison with expenditures.

34. With respect to (b), substantial progress has been made in reducing emissions of certain pollutants from stationary sources. Policies targeting products and substances are being stepped up, particularly in the European countries.

35. With respect to (c) the pattern of pollution control expenditures in a number of industries in the United States, for example, shows that for the entire manufacturing sector, pollution-abatement capital expenditures after declining in the mid-1980s had been rising again towards the end of the 1980s. Pollution-abatement operating costs rose steadily through the period, doubling as a share of total manufacturing shipments from 0.3 to 0.6 per cent. However for certain sectors, such as oil, paper, steel and others, the costs were much higher.[18]

36. The main area where legislators and firms are likely to focus their attention in a number of OECD countries is the control of household rubbish and industrial solid waste. It was estimated that the waste management market in the European Union would increase from US$39 billion in 1995 to US$62 billion by the year 2005.[19] Linked with waste management, discussions on lender liability are expected to lead to legislative proposals, particularly in the European Union. However, the lead time between formulation and implementation of this policy may be long as this instrument may be difficult and complicated to implement.

37. With respect to (d), while some regulations have induced innovations, the pace and detail of any regulation in any country are unpredictable, and cannot be causally linked to the innovative potential of firms or nations. For example, studies conducted in the United States during the 1980s showed that many sectors with high environmental costs, such as chemicals, plastics and synthetics, fabrics, yarn and thread, miscellaneous textiles, leather tanning, paints and allied products, paper board containers, actually used innovative approaches and adjusted with relative ease to environmental requirements. However, other sectors such as ferrous metal mining, non-ferrous mining, chemical and fertilizer mining, primary iron and steel, and primary non-ferrous metals with equally high environmental costs had been unable to innovate and showed negative trade performance.[20] With respect to (e) savings arising from environmental policies may be small compared with overall costs.[21]

C. Conclusions

38. The preceding analysis shows that while competitiveness effects of environmental regulations have not so far been significant, developed countries are nevertheless questioning whether policies could be formulated in such a way as to minimize competitiveness effects. This focus reflects first the fact that a lot of ground has already been covered; moreover the cost effects of future legislation are likely to be more severe than hitherto.

39. Some argue that the enactment of environmental legislation should not be deterred by considerations of competitiveness, while others argue that a rigorous cost-benefit analysis of a proposed environmental measure is necessary.[22] The difficulties of quantifying the benefits of an environmental measure and the difficulties of conducting risk assessments prior to implementing an environmental measure are widely recognized. There is also a growing consensus that the environment is a public good, and that its preservation should be paid for by consumers and producers alike. Moreover, for achieving a given environmental objective, the question is not only whether firms lose or gain competitiveness, but also whether these effects can be mitigated by more cost-effective environmental instruments or policies.

40. Postponing environmental regulations on the grounds that they affect trade and competitiveness may eventually increase legal and transaction costs. Delays and uncertainties may have serious business and financial repercussions significantly greater than any possible trade and competitiveness losses.

41. If social preferences clearly demonstrate a desire for a clean environment then economies will probably (like compulsory education or health care) devote resources to environmental protection, buying significant improvements in environmental quality. Whether these resources come from the general budget or from the firm is a choice to be made at the national level. The degree of acceptable environmental risks and associated costs is also likely to be decided at the national level.

III. LOSING EXPORT COMPETITIVENESS: CONCERNS OF DEVELOPING COUNTRIES

42. While in the developed countries the debate tends to focus on the question of whether competitiveness concerns may prevent or postpone the implementation of more stringent domestic environmental standards, in developing countries the main concern is over possible adverse effects of environmental requirements, including those arising from external markets, on export competitiveness.[23] Additionally, while compliance with specific environmental requirements give firms better access to developed country markets, such requirements may at times appear to be of limited environmental benefit to developing countries compared to other environmental investments.[24]

43. Developing countries are exposed to external environmental requirements in so far as they apply to their exports. At the second session of the Ad Hoc Working Group, it was observed that the effects of environmental policies may be larger for some sectors and for small firms in developing countries, but that more information was required on their quantitative significance in the overall level of exports from developing countries. Furthermore, while the Group felt that competitiveness effects in developing countries could be significant, appropriate government policies and innovation (called structural factors in this report) could mitigate such effects to a large degree.

44. This Chapter analyses environmentally related competitiveness concerns arising on account of the sectoral and scale composition of developing countries' exports. Problems of adaptation of the small-scale sector to environmental policies would be similar to those of adapting to product-quality requirements. An attempt will be made to distinguish between constraints that may be linked directly to environmental requirements and those that are endemic to operations in developing countries.

A. Sectoral composition of exports

45. The sectoral composition of developing countries' exports to markets in developed countries may make them potentially vulnerable to environmental policies for a number of reasons: (a) the high level of export concentration on a relatively small number of products/sectors, based on comparative advantage; and (b) the emergence, in the developed countries, of environmental policies, standards and regulations in these particular sectors.[25] Developing countries fear that the gains arising from trade liberalization (following the Uruguay Round) for products from these sectors could be eroded if compliance with environmental standards were to lead to cost increases or discrimination against their exports.

46. With regard to (a) and (b), environmental policies and consumer concerns in the developed countries are to a large extent sector-specific, affecting such sectors as fishery and forestry products, leather and footwear, textiles and clothing, and certain consumer products.[26] A number of product requirements such as bans on the use of specific chemicals, packaging regulations, and eco-

labelling apply to these sectors. As these sectors account for a significant share of total exports and an even larger share of manufacturing exports of developing countries, environmental policies could potentially affect not only export competitiveness but also export promotion strategies because the latter focus on the expansion of trade in manufactured products.

47. A preliminary analysis indicates that, on average, about one-third of the value of total exports and about half of the value of manufactured exports of developing countries originate in sectors which are potentially affected by environmental requirements. This aspect may be particularly relevant for Asian developing countries, since over 60 per cent of their manufacturing exports, in value terms, originates in such sectors. For example, textiles and electronics account for a high share of Asian exports to the developed countries. These are the sectors often simultaneously targeted by export promotion strategies and by environmental policies. Wooden products and fisheries are likewise vulnerable in this respect, accounting for over 25 per cent of exports from a number of African countries.

48. This picture is reinforced by evidence gathered by the country case studies. For example, in India, leather and leather products, textiles and fisheries together accounted for over 40 per cent of exports.[27] Figures on compliance costs with external environmental regulations were more difficult to obtain since they vary a lot between different products and export markets. For leather and textiles, increases in the range of 3 to 5 per cent of variable costs were quoted by most exporters, while capital costs were reported to be higher by 10 to 15 per cent. Given that India's export drive is largely based on the above-mentioned products, the potential effects on the export and growth capacities of these sectors are likely to be important.

49. The emergence of environmental requirements in the developed countries coincides with declining or lost competitiveness and over-capacity in a number of traditional sectors such as textiles and clothing and footwear. These very industries and sectors are those in which the developing countries are gaining or have already established their comparative advantage. This is because some traditional industries (e.g textiles and footwear) do not lend themselves easily to a high degree of automation and have remained relatively labour-intensive.[28] The comparative advantage of developing countries has largely been based on their ability to sell standardized mass-produced products at low prices, which also explains their concern about environmental standards and requirements. Product differentiation is low in the case of homogenous products, and producers generally find it difficult to recover through price premiums any increased costs owing to environmental improvements. In addition, since the home demand for "environment-friendly" products may be insignificant, the domestic market generally does not allow firms to recover incremental costs.

50. Assuming that other macroeconomic policies such as exchange rate policies remain constant, as developing country exporters normally are price-takers, any environmental requirement resulting in cost increases tends to reduce export competitiveness. For example, a study on China found that foreign environmental policies and regulations had increased the production cost of some Chinese enterprises and affected negatively their export capacity, particularly for products originating from big state-owned factories whose competitiveness was based on being able to sell cheap.[29] The export of low-value-added products coupled with high interest rates on local private-sector borrowing were cited as major constraints for Zimbabwean companies trying to meet new environmental standards.

51. Malaysia banned the export of logs in order to move to the high-value-added segment of the tropical wood industry and consequently found it easier to comply with environmental standards in OECD markets. Similarly, a case study on India reports that while in some sectors such as fisheries, price premiums may be high enough to make changes due to environmental considerations feasible, in textiles

and leather the possibilities of adjustments may be smaller on account of their being low-value-added products.

B. Firm size

52. The analysis presented in TD/B/WG.6/6 suggested that similar environmental standards and regulations may have differential effects on firms in developed and developing countries. Even leading exporters in developing countries may find it difficult to comply with certain stringent aspects of environmental requirements emerging from the developed countries. One of the reasons may be that they do not have sufficiently consolidated environmental management so as to meet easily the more stringent environmental requirements of external markets, though they seem to be conscious of the challenge ahead. Progress in environmental management has, however, been very uneven among sectors and firms, problems of adjustment being higher for small-scale firms.

1. Share of SMEs in exports

53. The share of small and medium-sized enterprises (SMEs) in total exports of developing countries varies widely from country to country and from sector to sector. According to an ITC survey, SMEs' share was around 50 per cent of total exports in a number of Asian developing countries. Their share was much higher for certain sectors such as textiles, footwear and toys. For example, while the share of the SMEs in India's total exports was about 32 per cent, their share in exports of textiles and leather was about 80 per cent. Similarly, in the Republic of Korea, while SMEs accounted for 40 per cent of total exports, their share in exports of electric and electronic products was about 60 per cent.[30]

54. While SMEs account for a relatively large share of total exports in a number of developing countries, they export only a small share of their total output. For example, even though in Bangladesh SMEs accounted for a large share of exports in a number of sectors (around 80 per cent), it bas been estimated that they exported only about 4 per cent of their total output.[31] This implies that the potential to expand SME exports is very large. Indeed, SMEs are important players in the export promotion strategy of many developing countries. It also indicates, however, that there may be a need to examine the possible conflict between the export promotion strategies of developing countries and their need to comply with environmental requirements of their major export markets.[32]

2. Constraints faced by SMEs

55. The constraints faced by SMEs in meeting environmental standards and regulations can be divided into two categories (a) those which are endemic to the nature of their operation (b) those which can be specifically linked to environmental requirements. As both kinds of constraints reinforce each other, the distinction is significant only from an analytical point of view. For example, if an environmental requirement results in additional capital costs, SMEs which are often capital short, may have greater difficulties in complying. However, the picture will vary from country to country, and from sector to sector.

56. With regard to (a) - endemic constraints -, studies indicate that SMEs employ more labour per unit of output and source inputs locally. They are less able to adapt to new technologies, to provide training, or to engage in research and development, and have relatively limited access to capital. Apart from meeting environmental requirements, these constraints would apply equally if SMEs were being asked to improve their product quality.

57. Among the major difficulties faced by SMEs in complying with environmental standards and regulations are: insufficient access to inputs, information,

technology, and finance, relatively low quality consciousness, as well as lack of infrastructure.

58. With regard to (b), the evidence gathered from the country studies corroborates the nature of the constraints identified above. A study from Colombia shows that in four sectors (leather, bricks, french fries and printing presses), SMEs were found to have special difficulties in adapting specifically to environmental standards relating to toxic residues either in the effluents or in the products themselves, in controlling emissions, and in introducing environmental management systems.[33]

59. In a study on Argentina, SMEs in three sectors (paper, leather and steel), found it difficult to comply even with local environmental regulations. SMEs contributed significantly to local environmental problems (SMEs tended to operate old facilities located near urban areas). SMEs had insufficient access to finance, technology and space and had limited possibilities to adopt cleaner technologies. In order to comply with environmental standards and regulations, SMEs would have to incur proportionally higher investment and operating costs than modern, large-scale plants. Under these circumstances, enforcement of stringent environmental standards would result in massive closing down of SMEs in these sectors, unless efforts were intensified towards finding cooperative solutions, such as relocating firms to industrial areas specifically supplied with infrastructure and joint facilities for effluent and waste treatment.

60. A number of studies have pointed out that adapting to environmental standards may be especially difficult for SMEs in specific sectors, for example the leather and footwear industries as well as the textiles and garment sectors. This is largely because, for small and spatially dispersed producers, common effluent treatment is not a realistic option and therefore environmental standards can result in higher costs. Even in cases where common effluent treatment is technically feasible, its costs may be prohibitive. Finally, the variable cost component of complying with environmental standards is high. For example, in the leather tanning sector in India, the costs of chemicals required to meet international standards were approximately three times higher than the costs of conventional chemicals.

61. In addition, operating costs for using effluent treatment facilities would be significant. A case study on the Colombian leather industry, based on a sample of over 300 SMEs, found that the operating costs of a common effluent treatment plant alone would be as high as a third of the investment cost.[34]

C. Structural factors

62. The ease of compliance with external environmental standards and regulations may depend on a number of factors, such as the relationship with domestic suppliers of raw materials and intermediate goods, cooperation between Government and industry, and factors such as technology, innovation and environmental management. Exactly how these factors affect competitiveness is unpredictable, as in the case of developed countries.

63. A study on Brazil suggests that in the past, within the context of a rather closed economy, the price of basic raw materials and intermediate goods was controlled by government. Producers of finished goods would find it difficult to impose environmental requirements on their domestic suppliers, particularly if compliance required significant new investments. It thus follows that poor environmental performance of input producing industries in the home market, could increase the vulnerability of export-oriented industries. (A notable exception in Brazil has been the pulp industry, which is vertically integrated with plantation forests.) Similar relationships have existed in India between the dyestuff industry and the textiles industry in the past, but are much less common today.

64. Studies also report that environmental regulation and requirements in the home markets of developing countries have not reached a level of sophistication where they can induce innovation and adaptation. With some notable exceptions, the surveyed firms in most country case studies have not generated any environmentally friendly products and have little endogenous capacity to innovate in environmentally friendly technologies, perhaps as there is only a small domestic market for such products and technologies. Furthermore, the efforts of leading firms in this direction have had little impact on other domestic firms, making the former into "environmental islands".[35]

65. However, a study on environmental management in mining and mineral processing in developing countries found that "contrary to the belief that a trade-off exists between production costs and environmental costs which presupposes a static technology, new generations of technology offer improved economic and environmental performance". It concluded that "because most planned mines and available reserves are in developing countries, situations may develop whereby technical change reduces the trade-off for them".[36] However, it is recognized that developing countries may need to build technology transfer and training clauses into joint ventures.

D. Responses to external environmental requirements

66. In their key export sectors, developing countries tend to react quickly to the emergence of environmental policies and environmentally based consumer concerns. A number of these requirements may originate from clients or because of voluntary measures which may not currently be subject to international trade rules. Firms in the developing countries have complained that such measures may increase the uncertainty and risk of operation in international markets, with which it is more difficult to cope than with factors such as changes in fashion. One of the reasons could be that channels of communication of information on fashions are well established, as part of normal business strategies and fashion is a pre-condition for keeping or increasing market shares. Gains in terms of market shares from adhering to environmental policies are perhaps less obvious at the level of the firm.

67. However, Thai fish processing factories, for example, have taken several steps in response to environmentally-related external factors. Even though Thailand is not affected by any primary or secondary embargo on imports of tuna fish under the United States Marine Mammal Protection Act (Thailand was not identified as one of the "intermediary" countries affected by the embargo imposed by the United States in 1990), one large Thai company felt compelled to engage in an expensive public relations campaign to reassure environmental protection groups and consumers that the tuna it bought for processing was "dolphin-safe". Similarly, even though Thailand has not been listed as a country seen as breaching United Nations Resolution 44/225 on large-scale driftnet fishing, Thai processing industries have reportedly refused to buy fish caught by driftnets for fear that the products could be disallowed access to foreign markets, in particular the United States.

68. Malaysia's response to environmental policies in timber markets has been to organize campaigns to oppose restrictive measures, export diversification and adaptation (altering production methods to suit requirements of greener markets). A study has suggested that, given Malaysian's export profile and Malaysia's policy in the wake of external measures and concerns, the impact on exports has been small.[37]

69. Similarly, a case study on Malaysia's electronics industry has indicated that the very rapid expansion of this sector could have created serious environmental problems if unchecked. However, pollution growth in this export-driven sector has been successfully controlled by the Environmental Quality Act. A high level of compliance has been reported. The Government has moreover constructed a national waste treatment facility.[38]

E. Conclusions

70. Developing countries' exports may become vulnerable to external environmental requirements, on account of their scale and sectoral composition. The comparative advantage of developing countries lies in labour-intensive, low-value-added products which are now becoming potentially affected by environmental requirements in the OECD countries. In most cases regulations in the OECD countries do not apply to the products themselves but to chemicals or other inputs used for these products. Such bans are often applied on the basis of the precautionary principle because of the difficulties and expenses of conducting risk assessment. While the chemicals themselves may be environmentally harmful, whether they are equally harmful in the concentrations in which they are used in the products concerned is not always clear.

71. Chemical content requirements are imposed either because of exposure risks for the consumer or because of environmental problems associated with the use (diffusion of toxic residues) or the disposal of products in the importing country. The estimated economic costs of the measure tend to have an effect in determining the accepted level of risk. For example, an anticipated significant increase in consumer prices may influence the accepted level of risk. Since legislators may anticipate market reactions, to some extent the notion of proportionality is inherent in the formulation of environmental policies. An interesting question is whether this notion could be extended to the case of particular sectors where most of the domestic consumption comes from imports from developing countries, and where the costs imposed on the foreign producer are high in comparison to the benefits to the domestic environment.

72. If a large part of global consumption of some products or sectors originates in developing countries, then it could be necessary and even desirable to take into account the production conditions in developing countries, in order to maximize the environmental benefits arising from specific environmental policies. Moreover, the fact that a large share of the export activity originates from the small-scale sector makes developing countries potentially more vulnerable to external environmental policies. Small-scale enterprises generally produce low-value-added products, and suffer severe shortages of skill, technology and finance. In addition, they have difficulties in obtaining information on environmental regulations and in sourcing environmentally friendly raw materials. Environmentally sound technologies developed by large-scale firms may be less easily adapted to small-scale firms. Certification and testing of products would also be proportionately more expensive for small-scale firms.

73. Special measures for SMEs could be divided into three categories: (a) short-run (b) medium-term and (c) long-run. In the short-run, there may be a need to grant more leeway to SMEs in the course of imposing more stringent standards on a sector as a whole. In the medium term, technical and financial assistance should focus on SMEs, to assist them in meeting environmental requirements. In the long run, SMEs in developing countries need to address issues such as lack of financial assistance, lack of technology and the low quality of their products.

74. One alternative being explored in order to facilitate the adaptation to environmental standards is to encourage FDI by SMEs in developing countries. As part of their general liberalization procedures, some developing countries are changing their administrative procedures for the approval of foreign direct investments (FDI), e.g Malaysia and Thailand have no minimum levels for FDI, which implies that FDI can also go to SMEs. Finding cost-effective chemicals (e.g. natural chemicals) and reducing effluents at source in the small-scale textiles and leather sectors could also be a long-run undertaking. Tax and fiscal incentives can also encourage domestic SMEs to invest in environmental improvements. Technological cooperation between small-scale units in developed countries with those in developing countries could also be beneficial in this regard.[39]

75. Among the structural factors, experience shows that improved environmental protection and greater pollution control can be achieved simultaneously with high rates of economic and export growth. Two factors would be important: (a) the central role of technology development through the acquisition of efficient technologies, and through research and development both by industry and government; (b) strong cooperation between government and industry in achieving pollution reduction alongside economic growth.[40]

IV. MULTILATERAL ENVIRONMENTAL AGREEMENTS (MEAs)

76. Multilateral Environmental Agreements (MEAs) address environmental threats which are transboundary or global and where it is generally recognized that solutions should be multilateral.[41] The Rio Declaration, through Principle 7, recognizes the responsibilities of all countries, developing or developed, in addressing global environmental problems: "In the view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures that their societies place on the global environment and of the technologies and financial resources they command". Consequently, developed countries have taken the lead in addressing a number of environmental problems. As recognized in Agenda 21, paragraph 2.20, "in a number of cases, trade provisions in MEAs have played a role in tackling global environmental challenges".

77. MEAs are an important means to improve environmental management and to achieve sustainable development; the use of trade provisions in specific MEAs has been widely accepted by developed and developing countries. However, the means for evaluating environmental resources/factors remain unclear and under-developed, which makes it difficult to assess the benefits and costs of MEAs (including possible trade and income losses).

78. The relationship between World Trade Organization (WTO) rules and trade measures used in MEAs are being discussed by the WTO Committee on Trade and Environment. At the second session of the AHWG, it was noted that each MEA is different and has to be looked at separately.[42] A need was felt to analyze the Convention on Trade in Endangered Species (CITES), the Convention on the Transboundary Movement of Hazardous Wastes and their Disposal (the Basel Convention), and the Protocol on the Phase Out of Substances that Deplete the Ozone Layer (the Montreal Protocol), among others. This chapter analyses these three MEAs, with a view to examining their positive and negative trade and competitiveness effects, taking into account both the use of trade measures as well as positive measures, such as the Multilateral Fund under the Montreal Protocol. The conference of parties, for example under the Montreal Protocol, has recognized that trade and competitiveness effects may be relatively more significant for developing countries, and has proposed facilitating mechanisms which are discussed below.

A. The use of trade measures

79. The use of trade measures in MEAs has several purposes. First, trade measures against non-parties are aimed at preventing free-riding. Secondly, trade measures may aim at persuading countries to accede to an agreement by making the cost of not joining higher than that of joining. These two factors have guided the use of trade measures in the Montreal Protocol. Thirdly, the fulfilment of environmental objectives may be based on trade measures, particularly those among parties, e.g. the Basel Convention and CITES.[43] One important issue is whether the use of trade measures could lead to a situation where Principle 7 of the Rio Declaration was not upheld.

1. The Montreal Protocol

80. The trade provisions and the trade effects of the Montreal Protocol are complex.[44] One provision is the restriction on trade with non-parties: since trade with non-parties is banned, their supplies of ozone depleting substances (ODSs) and most of their export markets for products containing controlled substances are virtually cut off. However, with regard to the original Montreal Protocol, the distinction between parties and non-parties has become virtually irrelevant as the Protocol has achieved quasi universal membership. In addition, while parties to the Protocol may trade controlled substances among themselves, such trade is constrained by the phase-out of production and consumption. Since the latter is defined to include trade, parties that have reached their consumption limit may not import any more controlled substances unless they export an equal amount. Thus, in practice, trade between parties, as well as between non-parties is constrained.

81. After different adjustments and amendments, the scope and timing of trade measures have become complicated; currently they differ for example, for each group of chemicals concerned, depending on whether or not individual countries have ratified (or assumed similar commitments to those contained in) the London and Copenhagen Amendments. For example, developing countries which have not ratified these amendments, may be considered as non-parties with regard to new chemicals and hence could become subject to trade restrictions.[45]

2. The Basel Convention

82. The Basel Convention entered into force in 1992. Under its original terms, hazardous wastes could generally not be traded between a Party and a non-Party (except via Article 11), whereas transboundary movements are permitted between parties, under certain conditions.[46] The Basel ban is an export ban as well as an import ban, and thus for enforcement the onus does not fully fall on the importing non-OECD country which is least likely to accomplish this, but on the OECD exporter with the greater resources for infrastructure for enforcement and implementation.

83. Normally, the conditions would require the pre-notification to, and consent of, the recipient country prior to export. These restrictions were introduced primarily because transboundary movements of hazardous waste could create a disincentive for properly managing and reducing hazardous wastes at the source, and because the hazardous waste trade resulted in the transfer of damaging pollution often to countries ill-equipped to cope with it.

84. The second meeting of the Conference of the Parties (March 1994) decided to ban exports of hazardous wastes from OECD member States to non-OECD member States. The ban takes immediate effect for exports for final disposal and for recycling as of 31 December 1997. This ban is in response to the fact that hazardous wastes had been exported from developed to developing countries for the stated purpose of recycling, but without the importing country having the technical capacity to manage such waste in an environmentally sound manner.

85. Any transboundary hazardous waste transaction taking place in contravention of the provisions of the Basel Convention is considered "illegal traffic". According to Article 9 (illegal traffic), the State responsible for movement of hazardous wastes has the obligation to ensure its environmentally sound management, if necessary by re-importation into the State of origin. In conformity with Article 8, if disposal is not carried out in accordance with the terms of the contract, the State of export has a duty to reimport. In addition, if a transaction takes place in accordance with relevant provisions, but disposal cannot be carried out as foreseen, the State exporting has an obligation to ensure re-importation of the wastes if alternative arrangements cannot be made for their environmentally sound disposal.

86. Perhaps the principal stimulus to transboundary movements of wastes between developed and developing countries is the substantial disparity in costs of disposal, including costs of compliance with technical standards.[47] Given the great difference in costs of disposal in various countries, if trade is prohibited, it may be anticipated that an incentive for illicit trade will grow.[48] Nevertheless, it is anticipated that the ban will reduce the total amount of waste traded.[49]

87. Thus, while a ban on export of hazardous wastes which cannot be disposed of in developing countries is a legitimate precautionary measure,[50] one important issue is whether these countries have the infrastructure to effectively control (and detect) illegal trade in hazardous wastes. While the obligations for reimport of illegally exported wastes apply to parties, non-parties are not under any such obligation. Arrangements concerning liability which could involve both the exporter and the State of export for any reimport and costs of clean up would perhaps better meet the objectives of the Convention.[51] It should be noted that such a Protocol on Liability and Compensation has been proposed within the framework of the Basel Convention, to provide incentives to minimize trade in hazardous wastes.

3. CITES

88. The Convention on International Trade in Endangered Species (CITES) regulates commercial trade in endangered and other species. When a species reaches a certain level of vulnerability, the parties to the Convention list it in one of three appendices. This placement determines the extent to which trade is permitted in the species. Appendix I species are those "threatened with extinction and are or may be affected by trade". Trade in Appendix I species is prohibited for "primarily commercial purposes". Appendix II contains species that "although not necessarily now threatened with extinction, may become so unless trade in specimens of such species is subject to strict regulation in order to avoid utilization incompatible with their survival". Trade in Appendix II species is prohibited if authorities in the country of export determine that the export will be detrimental to the survival of the species. Appendix III lists species that a country has identified as "subject to regulation within its jurisdiction for the purpose of preventing or restricting exploitation, and as needing the cooperation of other parties in the control of trade". Unlike species in Appendices I and II, the listing of species in Appendix III does not require a vote of the conference of parties. Trade in these species requires the presentation of appropriate export documents at the time of importation.

89. It is to be noted that CITES is likely to have totally different impacts depending on the particular species being regulated. Trade provisions of a global nature may in some cases be contentious from a local perspective. For example, while elephants may be globally endangered, in a particular country, such as Zimbabwe for example they may exceed the sustainable number of herds and endanger other species. In this situation, it may be necessary to allow for exemptions on a case by case basis from the use of trade restrictions by individual countries. The conference of parties to the CITES has discussed this case and one of the solutions proposed was the split listing of elephants: those elephants considered sustainable could be listed in Appendix II, while others should be listed in Appendix I. The conference of parties was, however, unable to reach agreement on this proposal.

B. Trade and competitiveness effects of MEAs

90. MEAs may have trade and competitiveness effects irrespective of whether they have trade provisions. However, for each MEA such effects may be quite different, depending on the mechanism used and the environmental problem addressed. Effects may be more significant for developing countries than for developed countries for a number of reasons. First, whereas the unit costs of adjustment may be the same between developed and developing countries (or may

even be higher for developed countries, on account of higher development costs of technologies), the overall difference in income levels would make the relative costs of adjustment higher in developing countries. This would be so particularly if capital costs of adjustment were high and the technologies required to meet the obligations of the MEA were harder to obtain or more expensive. Secondly, growth and export patterns of countries tend to be such that during the early stages of industrialization they may be more reliant on the export of products which are banned or restricted by MEAs. This hurdle may in turn affect their growth prospects. For example, a convention on forestry could have significant effects on tropical timber exporting developing countries. Similarly, at comparable levels of per capita income, the trade and competitiveness effects of the Montreal Protocol are likely to be more significant in tropical developing countries than in temperate zones, given the dependence on refrigeration and air conditioning. Short-run and long-run effects of MEAs on developing countries may differ considerably because of technological and other developments.

1. The Montreal Protocol

91. Trade and competitiveness effects of the Montreal Protocol on the developing countries' parties may be significant for several reasons: (a) the phase out of controlled substances in developed countries and the subsequent closing of production facilities may affect the competitiveness of developing countries to the extent that controlled substances or their substitutes are expensive or not-available;[52] (b) exports of products containing controlled substances may themselves become less competitive; (c) sectors relying on refrigeration, such as fruits and dairy products may encounter cost increases; and (d) production lines and technologies may themselves have to be changed in order to use substitutes, and existing technologies may become difficult to service.[53] Developing countries' concerns are further heightened since most developed countries are now on the fast-track towards phase-out rather than a 50 per cent reduction, as was originally scheduled in the Montreal Protocol. The Multilateral Fund is meant to address the issue of additional financing required by developing countries seeking to comply with the Protocol.

92. With regard to (a), studies indicate that trade and competitiveness effects would differ according to whether or not the countries themselves produced controlled substances. A study on Poland, which did not produce controlled substances, found the costs of polyurethane used in upholstering furniture go up substantially.[54] Other countries, such as India and the Republic of Korea, which were just becoming self-sufficient in the production of chorofluorocarbons (CFCs) reported additional costs of closing down their production facilities.[55] In fact firms were unable to pay back the investment in these plants.

93. With regard to (b), some developing countries because of their high rate of growth relied on the use of CFCs (or their substitutes) in the manufacture of products such as electronics, refrigerators, and other such products, both for export and domestic markets. Table 4 of the statistical annex, (see TD/B/WG.6/10/add.1) indicates that developing country exports to OECD countries of some products, such as refrigerators and freezing equipment, which could contain controlled substances, has been growing more rapidly than the exports of all manufactured products, and certainly much more rapidly than intra-OECD trade in such products.[56]

94. Poland's commitment to cease the use of freon in refrigerators, freezers and freezing counters could, in the short run reduce exports of these products. Poland did not have the technology to eliminate ozone depleting gases and the import of such technology would increase costs for the refrigeration industry. Similarly, studies on refrigeration and air-conditioning industries in India have revealed that these sectors recognized that new investments in non-CFC technology were required, but information on such technologies was not forthcoming and

testing of these technologies for Indian tropical conditions was not being done.

95. Developed country markets are increasingly demanding ozone-free products. For example, Chinese exports of refrigerators have decreased sharply (58 per cent in volume between 1988 and 1991). The case study on China has attributed this drop to the fact that most refrigerator manufacturers in the country did not have the financial capacity to invest in CFC-free technology.[57] Similar declines were noted for other products containing ozone depleting substances (ODSs). Conversely, firms (admittedly few), able to make the necessary technological investments had increased exports of ODS-free products.[58]

96. However, a study on Malaysia has suggested that the requirements under the Montreal Protocol have had little effect on the refrigerating and air conditioning industry, perhaps because Malaysia has been on the cutting edge of technological development with respect to air-conditioners. Production and exports of refrigerators and air conditioners have continued to increase strongly in recent years (see table 2 and 3 of the statistical annex). Unit prices have increased, whereas the share of raw material costs in output values has remained almost constant. The study suggests that increases in production costs may have been transmitted to product prices, and/or that technological changes may have increased productivity.[59]

97. With regard to (c), a case study on Colombia indicated that the industries potentially affected are those which rely on CFCs for refrigeration, in particular producers of flowers, bananas and processed meat. Similarly, in Poland, exporters of products reliant on refrigeration, such as dairy products, fruit and vegetables, may meet increased costs of refrigeration. However, no cost estimates were provided by the country studies. In a case study on Zimbabwe, where methyl bromide is largely used in horticulture and in bulk grain storage, concern was expressed that the detection of methyl bromide in exported products could imply difficulties in accessing the markets of countries, if these countries were to implement product content requirements.[60]

98. With regard to (d), the cases where technological changes may increase costs can be divided into two groups. The first group includes large firms which are consumers of ODS, but with access to the Multilateral Fund. In Colombia, for example, for the largest consumers of ODS the estimated incremental costs of technology switching would be in the range of US$55 million. In 1994, projects for a total of about US$8 million were approved by the United Nations Development Programme (UNDP) in the framework of Colombia's country programme. The second group comprises small firms which in practice cannot access these funds easily. However, it should be noted that special provisions are being designed for small users of CFCs through providing funds to foundations which can then channel investments to SMEs.

99. Furthermore, detailed studies conducted by the United Nations Environment Programme (UNEP) have shown that the prospects for ODS phase-out are affected by different combinations of factors in different countries. Economic and political systems and structures, technological development, and the level of international economic activity vary widely among developing countries. In the context of the existing Montreal Protocol, the consequence of these differences means that the feasibility of a global phase-out scenario is determined by the countries that eliminate ODS last, rather than by those that phase out sooner. This further emphasizes the role of enabling mechanisms in helping countries to eliminate ODSs.[61]

100. The overall costs of meeting the obligations of the Montreal Protocol have been estimated by some countries. For example, the Republic of Korea has estimated that the incremental costs of meeting the obligations would amount to US$1.9 billions; for India and China figures in the order of the same magnitude have been estimated.[62] These estimates, however, do not take account of the fact that cheaper substitutes and technologies may become available in future.

2. The Basel Convention

101. The competitiveness effects of the Basel Convention on developing countries and countries in transition can be positive or negative, at both the firm and national level. Few empirical studies, however, have investigated these effects.

102. At the national level, bans on transboundary movements may decrease the cost of cleaning and prevent soil and water contamination.[63] To the extent that hazardous wastes exported to developing countries result in the contamination of soil and adjacent waters, the future productivity and economic uses of these natural resources may be reduced, besides endangering human, animal and plant life.

103. To the extent that trade bans may lead to illegal trade, control may strain the monitoring and administrative capacities of national Governments, particularly those of developing countries.[64]

104. With regard to effects of the Basel Convention on competitiveness at the firm level, an important question is to what extent the Basel Convention prohibits recycling of waste materials. This depends largely on whether or not waste materials, particularly waste metals, fall under the definition of "hazardous waste".[65] In determining whether or not metal wastes are to be considered hazardous, the waste management practices of the importing country are of material importance. For example, even if only a small quantity of lead content is present, a metal may nevertheless be considered hazardous if there is a risk that lead enters into the environmental media of the importing country, and particularly if lead contaminants are already close to the permissible level.

105. Although there are a number of problems with regard to the classification of different waste streams, whether bulk trade and recycling of secondary metals may be affected is an open question, giving rise to uncertainty among users of metal wastes. Some industries which obtain part of their inputs from recyclable wastes may be affected by the Basel Convention. For example, the iron and steel industry in Brazil has expressed some concern about the sourcing of their inputs.[66] The country study on Poland reported that a branch potentially affected by restrictions in waste trade is the metallurgical industry: import limitations on scrap iron are likely to result in price increases of these secondary materials in the domestic market and, ultimately, to increased production costs.[67]

106. The Basel Convention has not yet elaborated limit values on concentrations; however, the Convention does recognise all national definitions of the countries involved and therefore makes use of existing limit values. The "grey" areas with respect to contaminants found in scrap metals are currently being elaborated at an accelerated pace in the Technical Working Group. Work is aimed at ensuring that trade in metals containing only relatively small and harmless amounts of hazardous contaminants is not affected by the trade ban. This concern may be particularly relevant for metal wastes as metals never occur in nature free of alloyed "contaminant" metals.

3. CITES

107. CITES could sometimes result in unintended trade and competitiveness effects on some parties. For example, if a country using national measures is able to manage specific controlled species sustainably, then trade measures could result in unnecessary economic losses with little environmental gains. Put another way, the lack of rewards in CITES for managing species sustainably gives parties little incentive to do so. Zimbabwe, for example, as a party to CITES, reports significant trade losses with regard to crocodile farming and ivory trade. Elephants and crocodiles are not endangered in Zimbabwe, but under the Convention trade in these products is banned. Three years after the introduction of the ivory trade ban in 1989, Zimbabwe had accumulated from culling operations

an estimated stock pile of US$ 12 million worth of ivory that it could not sell legally.[68] Thus, in Zimbabwe's view, the ban on ivory trade is counter-productive in that it prohibits legal and controlled trade in animal products whose management is sustainable.

C. Adequacy of facilitating mechanisms in MEAs

108. There has been either an implicit or an explicit recognition that MEAs may have more than proportionate trade and competitiveness effects on developing countries in the formulation of the MEAs. These effects may need to be addressed if their environmental objectives are to be met in accordance with Principle 7 of the Rio Declaration.

1. The Montreal Protocol

109. Perhaps the clearest recognition of Principle 7 of the Rio Declaration can be found in the instruments used for the implementation of the Montreal Protocol. Two instruments are of relevance in this context: (a) differential phase-out schedules for developing and developed countries (b) financial assistance for Article 5(1) countries party to the Protocol.[69] It should be recognized that these two positive measures are almost the first of their kind; no other MEA has such provisions.

a. Differential phase-out schedules and other enabling mechanisms

110. The implementation of differential phase-out schedules between developing and developed countries may have both positive and negative effects. Developing countries were given a grace period so as to spread their adjustment over a longer period of time, given the paucity of resources and technologies. However, as developed countries are now on a fast track towards phase out, supplies of CFCs and other chemicals may decrease, and substitutes may be expensive or simply not available. In this scenario, the grace period granted to developing countries may have become less relevant.[70] As far as availability of CFCs is concerned, according to the Ozone Secretariat, supplies currently are largely sufficient to meet the demand of the developing countries.

111. Industries phasing out such substances may also sell these products in developing countries at prices below those prevailing in developed countries, and thus create additional dependency on controlled chemicals. This increase in dependency on ODSs may postpone the adjustment and lead to increased costs in the long run.

112. Consumption of CFCs in a sample of 16 developing countries had increased by 45 per cent in the period 1986 to 1992.[71] While the Montreal Protocol allows an increase in the consumption of CFCs in developing countries, such increases may be indicative of the increased dependency of developing countries on the imports of controlled substances and their high growth rates. Increased dependency on CFCs, however, may imply higher costs of eventual phase-outs, particularly in terms of trade displacements and input price increases.

113. In addition, there may in theory be a possibility that differential schedules imply that industries using controlled chemicals may relocate to developing countries. There is some support for this proposition in the case of Thailand.[72] The Government of Thailand is in the process of negotiating with firms to phase out controlled chemicals at the same rate as in their home countries.[73]

114. The conference of parties to successive amendments of the Montreal Protocol recognizes the potential problems of developing countries in obtaining ODSs. For example, developed countries are permitted a national production slightly higher than the national consumption level for exports to developing countries, in order to enable them to meet their "basic domestic needs".[74] Concern over the

supplies of ODSs and ODS alternatives during the grace period and thereafter could be relieved if broadly based recovery, recycling and banking operations were established. The role of economic incentives and other policy instruments in recycling and reclaiming CFCs, and the repair and retrofitting of CFC-using equipment would strongly influence the amount of CFCs available to service existing equipment. So as to facilitate such policies, the parties have agreed that the recovery and reclamation of controlled substances were not to be counted as production.

115. The Montreal Protocol also recognized the importance of specific substances used by developing countries in connection with key exports for which substitutes are not available. For example, while the Copenhagen Amendment to the Protocol provides for a freeze on the production and consumption of methyl bromide at 1991 levels from 1 January 1995, the use of the chemical for quarantine applications (which includes pre-shipment quarantine fumigation) is to be excluded from the calculation of a Party's consumption and production levels. This amendment would specially benefit agriculture-based developing countries.[75]

116. The preceding mechanisms for mitigating the competitiveness effects on developing countries while alleviating the short-term problems may in some cases prolong or even increase long-term dependency on controlled chemicals, unless specific provisions can induce developed countries to either provide substitutes or technologies to developing countries. Given that an accelerated phase-out has been negotiated in successive amendments, developing countries' needs for new technologies and substitutes have become even more pressing. Moreover, a number of country programmes indicate that an early phase out has become less expensive than a late one. This implies that the differential schedule would be more beneficial to developing countries if additional funds, technologies, and substitutes were provided to them at an early stage of their phase-out.

b. Finance and technology transfer

117. The Multilateral Fund of the Montreal Protocol provides a financial mechanism to assist developing countries in meeting the obligations and in purchasing new technologies. Under the Montreal Protocol itself, no provisions were made for the transfer of technology on preferential terms, however. For example, according to a UNEP study, some developing countries such as Brazil, China, India and Mexico, which already produced CFCs, wanted to be able to produce any new substitute and expressed concern that no special provision had been made for the transfer of technology on preferential terms.[76]

118. Since the Fund was established in 1991, US$278 million has been approved for projects. For the three years beginning 1994 an additional US$500 million has been allocated to the Multilateral Fund. This total corresponds to 15 to 20 per cent of the estimated cost of meeting the current target of phasing out ODS in Article 5 countries by 2010. Most of the funds have gone to Asian countries, followed by Latin American and African countries. Enterprises which have benefitted most are those which are large and able technically to implement projects. Smaller firms often find it difficult to access the Multilateral Fund. This is of particular concern to India and China. Also, it has been noted that dissemination of information on technology choices has paid relatively little attention to SMEs in developing countries.[77]

119. Some commentators, however, have observed that though the Fund itself may appear adequate, several problems have arisen in disbursing finances to the developing countries. This could be partly due to the fact that the countries themselves have had major difficulties in putting together projects which can serve their needs and meet the approval of the Multilateral Fund. In several cases, the infrastructure required to absorb the funds coming from the Multilateral Fund under the Montreal Protocol may not be in place in the countries themselves.

120. For example, a study on Colombia has indicated that small companies manufacturing ODS-containing products (30 per cent of Colombian ODS consumers are SMEs) had no access, in practice, to the Multilateral Fund. The study suggested that the competitiveness of these small firms would probably be substantially affected by the need to switch to CFC-free technologies.[78]

121. Although it is difficult to determine the magnitude of technological transfer to developing countries, the majority of firms which have actually received new technology were either foreign joint venture partners or subsidiaries of transnational corporations (TNCs). In the Philippines, for instance, the main users of CFC-113 and other solvents in the Philippine electronics industry were foreign owned companies and had recently phased out most of their use of ODS, with the assistance of the Multilateral Fund. Similarly, in Kenya, total ODS consumption decreased by two thirds during the period 1989 to 1993 through voluntary actions encouraged by parent companies in non-Article 5 countries, which were able successfully to access technologies with the assistance of the Multilateral Fund. The Philippines and Kenya are examples of what has happened in many other Article 5 countries.

122. Financial commitments under the Multilateral Fund are considered by some studies to be inadequate. According to one source, India's requirements alone are considered to be nearly three times that of the entire multilateral fund.[79] Moreover, the unanticipated growth rates of Asian developing countries and the consequent increased need for refrigeration, etc., will impose high levels of costs in these countries. Concern has also been expressed about the administrative costs of disbursing the funds; these were estimated to be as high as 35 per cent of expenditures, on average.[80]

2. The Basel Convention

123. The Basel Convention requires Parties to take "all practicable steps to ensure that the hazardous wastes or other wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such wastes." (Article 2, para. 8 of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Final Act). In this regard, although the Convention does lend its support to technology transfer for handling waste in an environmentally sound way, it does so by providing "clearing-house" functions. The Basel Convention is proposing to establish regional and sub-regional centres for training and technology transfer regarding the management of hazardous and other wastes and for minimizing the generation of such wastes.

124. The Basel Convention provides for the conclusion of separate agreements between its parties, and also between parties and non-parties, under certain conditions, via Article 11, provided that such an agreement does not circumvent the purposes of the Basel Convention. Article 11 requires that such agreements be "compatible with the environmentally sound management of hazardous and other wastes as required by this Convention."

125. One question which arises is whether Governments have the legal provisions to induce the private entrepreneur to reimport wastes which may have been illegally exported to developing countries. Under the Basel Convention, Governments have the obligation through their national legislation to impose appropriate measures on their private entrepreneurs involved in the transboundary movements of hazardous wastes. In addition, the exporter/generator of wastes may need insurance coverage, bank guarantees, bonds, etc in order to enter a transboundary transaction. However, there is no provision in the Basel Convention for making the exporter liable for the costs of cleaning land and waters in the period that the waste is in the importing country prior to its reimport into the exporting country.

3. CITES

126. In the case of CITES, the problems posed to certain countries by the world-wide trade ban on ivory or other products have been mentioned above. To make the agreement function better for such countries in the event that the ban cannot be relaxed, consideration could be given to allowing countries to establish clearinghouses for products from culling activities. One proposal originating in South Africa was to establish a Central Ivory Market. It could provide a labelling scheme for exporters who could be permitted to sell legally products obtained under sustainable conditions, such as ivory obtained from culling operations.

D. Conclusions

127. The experience with the use of trade measures in the three MEAs has been diverse. Consequently, it is difficult to formulate general conclusions drawn from the analysis of a particular MEA. One measure of their effectiveness is whether or not trade measures can induce countries whose contribution to environmental problems is significant to become a party to the agreement. For example, the environmental effectiveness of the Montreal Protocol would have been reduced if India and China had remained outside the agreement. Conversely, it may also be argued that if an agreement is truly multilateral, with the participation of the major users of the environmental resources, then the use of trade measures against non-parties may no longer be relevant for achieving its environmental objectives. In any case, experience with MEAs suggests that there is a need to analyze carefully the environmental effectiveness of the use of trade measures on a case-by-case basis.

128. Moreover, to the extent that trade provisions in international agreements overshadow local initiatives, they can at times have potentially adverse implications for national environmental management, as has been the case in CITES for some species. In such instances, a case-by-case exemption might be provided in specific environmental agreements.

129. The analysis of MEAs also reveals that their trade and competitiveness effects may be relatively (in terms of their income and technological capabilities) high for developing countries, thus underlining the crucial role of positive measures. Agreements should include compensatory mechanisms which ensure an equitable distribution of costs of adjustments between developing and developed countries.

130. In some cases, MEAs may put a greater onus for adjustment on the developed countries for adjustment. For example, in the case of the Basel Convention, trade provisions may pose larger adjustment costs on developed countries than on developing countries. It may be that greater financial and technological transfers are needed in the early stages of the MEAs, as has been shown in the case of the Montreal Protocol. In establishing the time-frame for financial requirements under MEAs, the timing of financial and technological assistance is of material importance.

131. In addition to existing compensatory mechanisms, such as the Multilateral Fund of the Montreal Protocol, incentives which encourage investment in environmentally friendly alternatives could be built into the agreements. It is worth considering whether ways and means for providing incentives for the application of environmentally sound technologies, including those in the context of FDI could be designed to encourage the provision of substitutes and technologies to developing countries. In addition, it may be worthwhile exploring whether economic instruments, such as tax refunds, subsidies and tradeable permits, should be used in the context of MEAs.

V. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

132. Much of the international debate on trade and environment has focused on the linkages between environmental policies and competitiveness. In the developed countries, discussions have primarily addressed the question of whether competitiveness concerns (i.e. concerns that trade or investment may be lost to countries which have less stringent environmental standards) may discourage the implementation of more stringent domestic environmental requirements. In the developing countries, however, concerns have centred more around the question of whether specific environmental standards, particularly those arising from external markets, could adversely affect export competitiveness. In addition, in order to achieve sustainable development, developing countries may need to focus on improvements in social infrastructure and public utilities as part of their overall development policies. The need to comply with specific external environmental policies may divert funds from investments which yield higher environmental benefits.

133. As far as can be deduced from the empirical evidence available, the competitiveness effects of environmental policies, so far, have not been significant in developed countries. Be that as it may, some firms are concerned that future legislation may affect their competitiveness. It should be noted, however, that competitiveness concerns may be no more relevant in determining domestic environmental policies than they are in determining health, social, or educational policies.

134. Developing countries are concerned that environmental standards are emerging in those sectors where comparative advantage is shifting from developed to developing countries. The comparative advantage of developing countries lies in labour-intensive, low-value-added products which are now becoming subject to environmental regulations in the OECD countries. Moreover, many of these sectors are those in which tariffs have been reduced during the Uruguay Round, leading to fears that gains achieved in the Uruguay Round may be eroded if environmental and other standards were to lead to significant increases in production costs.

135. The competitiveness effects of external environmental policies could become more significant for small-scale firms and for firms in particular sectors, such as textiles, footwear, electronics and furniture, many of which are of export interest to developing countries. These two aspects together indicate a certain degree of vulnerability of exports from developing countries to environmental regulations of developed countries.

136. Specific environmental requirements emerging from external markets may be of relatively limited environmental benefit to developing countries. The diversion of resources from more pressing environmental problems in the domestic economy to the export sector may constitute a suboptimal allocation of scarce resources. Like the developed countries, developing countries should direct their resources to those environmental improvements where marginal returns are the highest.

137. It may be argued that where environmental standards relate to product characteristics, they should be treated as a quality standard, compliance with which is a precondition for doing business. To a certain extent, however, environmental standards are not like other product standards. This is the case, in particular, when environmental standards address non-product related processes and production methods (PPMs).

138. For some products, standards which address the use of chemicals in the production process may not always take into account that environmental effects of their use may differ between sectors. For example, while a ban on the use of a chemical may be imposed because in the process of producing it toxic wastes

are released into air and water, the same chemical may have less significant environmental effects when used for dyeing a fabric.

139. Multilateral Environmental Agreements have made important contributions to improving environmental management; in a number of cases, trade measures have played a role in tackling global environmental challenges. Experience suggests, however, that there is a need to analyse carefully the environmental effectiveness of the use of trade measures on a case-by-case basis. Trade measures may be necessary and effective in meeting environmental objectives only under certain conditions. If they induce large parties to join an agreement then they may be useful, but when Multilateral Environmental Agreements already have a large number of signatories including those that are significant current and potential contributors to the problem, then their use may be of limited relevance.

140. Furthermore, while all Multilateral Environmental Agreements may have trade and competitiveness effects, those which contain trade provisions may have more significant effects. Under specific agreements, these effects may be higher for developing countries in relative, and sometimes also in absolute terms than for developed countries. Lack of substitutes, lack of technologies and finance, lack of information on technologies, and trade displacements which may affect their development opportunities, may all have a bearing on these effects.

141. Because of the economic costs imposed on developing countries and considering that their contribution to environmental problems has been lower than that of developed countries, special efforts should be made to include positive measures in Multilateral Environmental Agreements which are in keeping with Principle 7 of the Rio declaration.

B. Recommendations

142. "Positive measures" (rather than trade restrictive measures) should be implemented to support the developing countries in their efforts to move towards more stringent environmental standards and to assist them in meeting internationally agreed targets in the context of Multilateral Environmental Agreements.[61]

143. The analysis presented in this report suggests that such positive measures could be directed at (a) alleviating sectoral vulnerability of developing countries, (b) special support measures for small-scale firms; and (c) mitigating trade and development effects of Multilateral Environmental Agreements.

Alleviating sectoral vulnerability and the principle of proportionality

144. In sectors where a large share of global production is located in developing countries, environmental policies could take account of production conditions in these countries. The report has suggested that the notion of proportionality between environmental benefits and economic costs may already be inherent in the formulation of environmental policies. An interesting question is whether this notion could be extended to the case of particular sectors where most of the domestic consumption comes from imports from developing countries, and where the costs imposed on the foreign producer are high in comparison to the perceived benefits to the domestic environment.

145. Policies on foreign direct investment (FDI) and technology improvement could form an important aspect of export promotion strategies in these sectors. Time-limited exemptions and special facilitating mechanisms may need to be granted to small-scale enterprises in these sectors.

Scale effects

146. Special measures may be needed for small and medium-sized enterprises (SMEs). These could be divided into three categories: (a) short-run (b) medium-term and (c) long-run. In the short-run, there may be a need to grant more leeway to SMEs, in the course of imposing more stringent standards on the sector as a whole. In the medium term, technical assistance and special financing programmes should focus on SMEs. Special measures may be needed to assist SMEs in meeting product-related requirements. In the long run, SMEs in developing countries need to address issues such as lack of financial assistance, lack of technology and the low quality of their products. Tax and fiscal incentives could also be granted to encourage domestic SMEs to invest in environmental improvements. Technological cooperation between small-scale units in developed countries and those in developing countries could also be beneficial.

MEAs

147. With regard to Multilateral Environmental Agreements (MEAs), two important features should be borne in mind. First, trade and competitiveness effects on developing countries may be higher or lower than predicted depending on factors such as the rate of economic growth, availability of substitutes, technological changes, and amendments to agreements which impose additional obligations on parties. Provisions in MEAs should allow for interim assessments to be made which take account of such changes. In addition, greater financial and technological transfers may be needed in the early stages. In setting the time-frame for financial requirements under MEAs the timing of financial and technological requirements is of material importance. Secondly, incentives which encourage trade in and use of environmentally friendly alternatives could be built into the agreements. For example, a voluntary mechanism on FDI or on technology transfer could encourage firms in the developed countries to provide substitutes and technologies to developing countries. In addition, the use of market-based instruments at the international level - such as additional tax refunds or subsidies which would ensure that all new investments and particularly FDI were chlorofluorocarbon-free could assist in meeting the objectives of the Montreal Protocol.

C. Points for future discussion

148. A checklist could perhaps be constructed of policies that constitute an effective synthesis between policy objectives on trade and environment in (a) domestic environmental instruments and policy-making, (b) multilaterally agreed instruments and agreements, (c) promotion of the objectives of economic development, openness and innovation.

Notes

1. See P. Krugman, 1994, "Competitiveness: a dangerous Obsession", published in Foreign Affairs, March/April 1994, Vol.73, No.2, pp 28-44.

2. See M.E. Porter and C. Van der Linde, 1994, "Towards a New Conception of the Environment-Competitiveness Relationship".

3. See TD/B/WG.6/6, para. 111 and the Chairman's summary of the second session of the AHWG, 6-9 June 1995.

4. See S.S. Cohen, 1994, "Speaking freely" in Foreign Affairs, Vol.73, No.4.

5. See Laura D'Andrea Tyson, 1992, "Who's Bashing Whom: Trade Conflict in High-Technology Industries", Washington:, Institute for International Economics, 1992.

6. To date, draft studies have been completed by the teams in Argentina, Brazil, China, Colombia, India, Malaysia, Philippines, Poland, Thailand, Turkey and Zimbabwe.

7. See B. Jaffe Adam, Steven R. Peterson, Paul R. Portney, and Robert N. Stavins, 1993, "Environmental regulations and international competitiveness: What does the evidence tell us?" Washington, D.C., Resources for the Future Discussion Paper, December 1993.

8. See P. Sorsa, 1995, Environmental Protectionism, North-South Trade and the Uruguay Round, IMF Working Paper, WP/95/6.

9. See the World Investment Report, 1992.

10. Robert Repetto, 1995, Jobs, Competitiveness and Environmental Regulation: What are the Real Issues?, World Resources Institute.

11. The standard hypothesis is that better environmental performance comes at a cost, so firms that divert resources to reduce their emissions beyond the point at which waste recovery just pays for itself must sacrifice some profits. Under this hypothesis, environmental performance and profitability should be inversely related. A counter view holds that once firms are motivated to seek out solutions to environmental problems by regulations or other pressures, they typically find previously overlooked opportunities for cost-saving to improve processes, reduce wastage or redesign products, thereby saving costs.

12. See Gray and Shadbegian, 1993, Environmental Regulation and Manufacturing Productivity at the Plant Level, NBER Working Paper No. 4321.

13. See United States, Office of Technology Assessment, Industry, Technology and the Environment: Competitive Challenges and Business Opportunities, Appendix A, OTA-ITE-586, 1994.

14. In the United States, for example, parts of the "Clean Water Act" as well as certain laws aimed at protecting endangered species have recently been called into question. European Governments may have also been slow in enforcing environmental directives.

15. See Leyla Boulton, "Confronting the backlash", in the Financial Times, 30 August 1995.

16. Frances Cairncross argues that, in recent years, "Governments began to slow down the pace of green legislation. In Germany, for instance, where the green movement had pushed through parliament an extraordinary complex and expensive scheme for recycling and packaging, other plans to force recycling of construction materials and electrical goods were quietly forgotten". The study adds, however, that "like the environmental wave of the late 1960s and early 1970s, that of the late 1980s and early 1990s has left a mass of legislation which will be implemented during the rest of the decade". The study also predicts that "all through the next century, there will be recurrent bouts of public alarm which will carry forward environmental legislation, especially in the countries that are now developing most quickly". Frances Cairncross, Green Inc, pp. 36-37, Earthscan, London.

17. See Financial Times: Survey 21.6.1995.

18. See Gray and Shadbegian, op.cit.

19. In the United Kingdom alone, the cost of implementing the measures is estimated to be around £100 million a year. See B. Maddox, 1995, "Consolidation and Revision", Financial Times, 1995, ibid.

20. See J.P. Kalt, 1988, "The Impact of Domestic Environmental Regulatory Policies on U.S. International Competitiveness", in A.M. Spence and H. Hazard (ed.), International Competitiveness, Cambridge, MA, 1988.

21. Northumbrian waters, an example cited by the United Kingdom Government, saved £850,000 in four years through more efficient energy use, compared with its turnover of £318 million and pre-tax profits of £90 million. Similarly, firms surveyed in the European Union felt that they were not getting the cost savings expected from the installation of environmentally sound technologies. See J. Martinson, "Environment: Management and Technology III", in the Financial Times, Wednesday, 21 June 1995.

22. Repetto, op.cit.

23. For example, Colombian exporters are only now starting to face external environmentally-related pressures. Likewise, the trade impacts of Multilateral Environmental Agreements remain yet to be felt. Many exporters feel that adhering to stricter environmental standards could actually make their exports more competitive. However, to be able to adjust to external requirements with minimum costs, the timely dissemination of information on such requirements is imperative. See: D. Gaviria, et al.,1994, Reconciliation of Trade and Environment Policies: The Case Study of Colombia. Study prepared under the joint UNCTAD/UNDP project on Reconciliation of Environmental and Trade Policies.

24. See TD/B/WG.6/6 and Chairman's summary of the second session of the AHWG.

25. Though this report focuses on the efforts by developing countries to meet the environmental standards and requirements of developed countries, the same considerations would apply if such standards were imposed in the developing countries themselves.

26. Leather, footwear and textiles are potentially affected by the control of chemicals, such as pentachlorophenol (PCP), dioxin, formaldehyde, azo dyes and a number of other substances in European markets. Eco-labelling programmes are also emerging in these sectors. For a detailed study of new and emerging issues see TD/B/WG.6/9. In the case of electronics, the bans apply to chemicals and solvents used in cleaning circuits and to certain metals used in these products, such as lead, cadmium, and zinc, etc.

27. The textiles industry was potentially affected on account of buttons containing heavy metals, and certain azoic and chrome-containing dyes, especially on synthetic textiles, which are allergenic; PCP, formaldehyde, chromium, nickel and pesticide residues in clothing and leather products, which may be carcinogenic.

28. For a detailed analysis of this issue, see TD/B/41(2)/8, Trade Policies, Structural Adjustment, and Economic Growth: Developments Relating to Structural Adjustment Policies in Developed Countries and their Implications, Report by the UNCTAD secretariat.

29. L. Ruishu, Y. Xia, J. Li, J. Zhang and Y. Lu (1993), A Study on Environmental Protection and Foreign Trade Development in China. Draft study carried out under the joint UNCTAD/UNDP project on Reconciliation of environmental and trade policies.

30. See United Nations, Expansion of Manufactured Exports by Small and Medium Enterprises (SMEs) in ESCAP Region. Vol II : National Studies New York 1995, for an detailed study of small-scale enterprises.

31. Ibid.

32. During the mid-1970s the main thrust of export promotion strategies was on "large industries". However, when large industries failed to adjust to changes mainly because of the high costs, there was a shift towards the promotion of small-scale industries as they are seen to contribute towards job generation, innovation and new organizational structures. A good example is found in SMEs in Japan and the Republic of Korea, which are among the most successful ones. SMEs tend to be more labour-intensive than large firms, e.g. in 1990 four-fifth of new employment in the United States was generated by SMEs.

33. E. Uribe and Y. Medina, 1995, "Small and Medium Enterprises and their Relationships with Environmental Regulations and Institutions in Colombia". Study prepared for UNCTAD.

34. Three of the other sectors studied, namely brick making, french fries, and printing presses may be able to comply with environmental regulations with greater ease. See Uribe, 1995, op.cit.

35. D. Chudnovsky, G. Lugones and M. Chidiak, 1995, Comercio Internacional y Medio Ambiente: el Caso Argentino, study prepared under the joint UNCTAD/UNEP project on Capacity-building on Trade and Environment. The study was also funded by project ARG/90/014, Ministerio de Relaciones Exteriores, Comercio Internacional y Culto.

36. See A. Warhurst, 1992, Environmental Management in Mining and Mineral Processing in Developing Countries, Natural Resources Forum, February 1992.

37. ISIS, op. cit.

38. Ibid.

39. For example, in 1985 an international cooperation agreement was signed between the Republic of Korea's (Small and Medium Industries Promotion Organization, SMIPO) and France's (Association pour la Promotion et le développement industriel, APRODI) to assist SMEs in the former country to upgrade their technologies by looking for an appropriate French partner. Both the organizations jointly advised SMEs on specific features.

40. The Institute of Strategic and International Studies (ISIS), A Malaysian Case Study, 1995, prepared for UNCTAD.

41. An unresolved problem around the trade and environment debate centres around what constitutes a multilateral environmental agreement. It is often difficult to distinguish between trade effects and trade measures or provisions which may be included in an MEA.

42. UNCTAD has been invited in cooperation with other organizations to examine the effects of trade measures in MEAs on the achievement of environmental goals and on trade and competitiveness of developing countries and countries with economies in transition. See United Nations, 1995, Commission on Sustainable Development, Report on the Third Session, 11-28 April 1995.

43. See Robert F. Housman, Donald M. Goldberg, Brannan Van Dyke and Durwood J. Zaelke (editors), The Use of Trade Measures in Selected Multilateral Environmental Agreements, Environment and Trade, Vol. No. 10, UNEP.

44. The Montreal Protocol of Substances that Deplete the Ozone Layer, hereafter referred to as the Montreal Protocol, was adopted in Montreal in 1987 and entered into force on 1 January 1989 with 29 parties. Initially parties agreed to freeze their consumption of chlorofluorocarbons (CFCs) at 1986 levels, followed by a 50 percent reduction in accordance with an agreed timetable. Taking into account the results of periodic scientific and economic assessments, in subsequent negotiations "amendments" were made to add new chemicals and "adjustments" were introduced to make limitations more stringent and to reduce the timetable for reductions. Following the London and Copenhagen amendments, rather than a 50 per cent reduction, most developed countries committed themselves to completely phase out the consumption and production of Ozone Depleting Substances (ODS) as follows: halons, by 1 January 1994; CFCs, carbon tetrachloride and methyl chloroform, by 1 January 1996; hydrobromofluorocarbons (HBFCs), by 1 January 1996; and hydrochlorofluorocarbons (HCFCs), by 1 January 2030.

45. Many countries which have not formally ratified the Montreal Protocol may nevertheless voluntarily commit themselves to the same phase-out schedule.

46. Under Article 11 of the Convention, imports and exports of covered wastes between parties and non-parties are allowed where the transboundary movements are subject to another appropriate bilateral, multilateral or regional agreement. Basel Convention, supra preface, note 4, at art.11.

47. According to a study made by UNEP, the average disposal costs for one ton of hazardous wastes in Africa was between US$2.50 to US$50, while the equivalent costs in industrializing countries ranged between US$100 to US$2,000. See K. Kummer, 1994, Transboundary Movements of Hazardous Wastes at the Interface of Environment and Trade, Environment and Trade, Vol. No. 7, UNEP.

48. See Greenpeace: The International Trade in Wastes: A Greenpeace Inventory, 5th ed., 1990.

49. Ibid.

50. See Greenpeace, 1994, Lead, Astray: The Poisonous Lead and Battery Waste Trade, Waste Trade Case Study No.5, Series: Recycling.

51. Under the Basel Convention, a Protocol on Liability and Compensation will be discussing. A three tier approach comprises: (a) making the exporting firm liable for the costs of reimport or clean-ups, (b) a Compensation Fund in cases where the exporter cannot be identified, and (c) making the State liable. There

are different degrees of acceptability of the three tiers among the parties to the agreement.

52. Controlled substances and their substitutes may sometimes be less expensive in developing countries than in developed countries.

53. It should be noted that these arguments have also been made by firms in developed countries in the process of negotiating CFC phase-out schemes in these countries.

54. B. Fiedor, S. Czaja, A. Graczyk, and J. Rymarczyk, 1994, Linkages Between Environment and Trade: A Case Study of Poland, Study carried out under the joint UNCTAD/UNDP project on Reconciliation of Environmental and Trade Policies.

55. UNEP, 1994 Report of the Economic Options Committee (EOC) on the Montreal Protocol on Substances that Deplete the Ozone Layer.

56. Trade statistics do not distinguish between CFC containing and CFC free refrigerators and freezing equipment.

57. The decline in the exports of refrigerators from China can in part be attributed to the enormous growth of domestic demand of that country.

54. R. Lu, et al, op.cit.

59. ISIS, op. cit.

60. Whether it is possible to detect traces of methyl bromide in products is not resolved.

61. "Report on the review under paragraph 8 of article 5 of the Montreal Protocol." (UNEP/OzL.Pro/WG.1/11/4).

62. UNEP, EOC, op.cit.

63. See K. Kummer, op.cit., and "Export gevaarlijk afval gaat in alle stilte gewoon door" in Internationale Samenwerking, (in Dutch), 7 August 1995.

64. K. Kummer, op.cit.

65. Since metals hardly ever occur naturally in their pure form, metal wastes usually consist of a main component and several minor components. The minor components are often substances that may come within the scope of the Basel Convention. The definition of hazardous wastes includes any category contained in Annex I to the Convention, unless it does not have any of the hazardous characteristics listed in Annex III thereto.

66. See Veiga, Castilho and Filho, 1994, The Country Case Study of Brazil, prepared for UNCTAD.

67. It should be noted, however, that the Basel Convention does not regulate iron, steel, aluminium, copper and zinc and indeed does not intend to regulate such scrap unless it is contaminated with hazardous substances.

68. See Nkomo, Zwizwai and Gumbo, 1995 A Case Study of Zimbabwe, University of Zimbabwe, and Development Activities, prepared for UNCTAD.

69. Article 5(1) countries are broadly classified as "developing", but more accurately they are those with annual per capita consumption of ODSs of less than 0.3kg at the date of entry into force or at any time thereafter until 1 January 1999.

70. See Rosalind Twum-Barima and Laura B. Campbell, 1994, Protecting the Ozone Layer through Trade Measures: Reconciling the Trade Provisions of the Montreal Protocol and the Rules of the GATT, Environment and Trade, Vol. No. 6, UNEP.

71. According to the Ozone Secretariat, based on data available as of 9 May 1994. Ibid.

72. See UNEP, EOC, op.cit.

73. D. Phantumvanit, S. Wigzell, E. Burankal, N. Bootherawara, and R. Bowonwiwat, 1994, The Interlinkages between Trade and Environment: Thailand, Draft study carried out for the joint UNCTAD/UNDP project on Reconciliation of Environmental and Trade Policies.

74. V. Bharucha, 1994, "Impact of Environmental Standards and Regulations on India's Exports", Report prepared for the Project RAS/92/034 on Institutional Capacities for Multilateral Trade.

75. UNEP, EOC, op.cit.

76. UNEP, op.cit.

77. UNEP, EOC, op.cit.

78. D. Gaviria, op.cit.

79. There are several estimates of the costs of adjusting to the requirements of the Montreal Protocol, both for an early and a late phase-out. The costs estimated by the World Bank were US$ 320 million and US$ 482 million, respectively. However, a Task Force set up by the Indian Government has estimated that costs could be as high as US$ 1.4 billion and US$ 2.4 billion, respectively. This is at least four times the size of the entire Multilateral Fund under the Montreal Protocol. However, it should be noted that alternative technologies and substitute chemicals are likely to be less expensive over time. This may not have been reflected in the estimates provided by the task force. See TD/B/WG.6/6.

80. UNEP, EOC, op.cit.

81. The Commission on Sustainable Development, at its third session (May 1995) invited UNCTAD and other relevant international organizations to identify such positive measures.